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ABSTRACT

This paper explores definitions of creativity, theories and models of creativity, and the classic stages of creativity. Creativity is best defined in terms of an interactive process. The creative process in adults often results in creative and useful products, and such creativity is judged in terms of their quantity and quality of patents, theories, books, and more. In children, however, the product may be original with the child, but not original with the culture. Four sequential stages critical to the development of creativity in the individual are discussed: (1) preparation, getting ready for an investigation or gathering new knowledge; (2) incubation when the brain sorts things out unconsciously; (3) illumination, inspiration, or insight, the light bulb moment; and (4) verification, a disciplined period of negotiating the image into a logical verbal mode. Conditions for creativity are covered and accounts of individuals who have demonstrated creative genius are cited. Several attempts at improving or teaching creativity also are offered. Because creativity is a mix of many talents, attitudes, and abilities, no single test or method is sufficient to measure it or to nurture it in all students. Educators teach creatively using novel strategies, techniques, and approaches to enhance creative behavior in the classroom. Selected tests that are used to measure creativity are discussed. Several suggestions on increasing creativity are listed. Contains 17 references. (DK)

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Creativity: Potential and Progress

Dorothy A. Sisk

Investigations from many different fields--psychiatry, medicine, psychology, sociology, anthropology, computer science, education, even quantum physics are piecing together a new picture of human potential, motivation and creativity. The outlines of this picture may be hazy, but the fragments that are being fit together more and more signal radical changes in our basic beliefs about the limits of creative capacity.

Creativity is much more than using your imagination to invent lots of new ideas. Researcher in creativity Gary Davis (1986) defines creative thinking as being the mainstay of creativity and that creative thinking is a lifestyle, a personality trait, a way of interacting with other people and a way of living and growing. According to Davis, living creatively is developing your talents, tapping your unused potential and becoming what you are capable of becoming. Becoming creative is also developing a sensitivity to problems of others and problems of humankind, and being creative in using one's imagination to solve problems.

Of all of the powers of man, that of creativity seems most unique (Gowan, 1973). Among the ancients, the generally accepted custom was to ascribe divine origin, inspiration or direction to any great creative work. Consequently, the poets became prophets. Today, creativity is still a somewhat new concept, sometimes attributed to the personality and still to some degree fraught with mystical connotations. For this reason, care should be taken in defining creativity and in distinguishing it from other mental functions.

Carl Rogers (1961), a noted psychologist explored the meaning of creativity in his book *On Becoming a Person*. He stated that the mainspring of creativity appears to be the same tendency which we discover in the curative force in psychotherapy--the tendency to actualize or to become potential, ...the urge to expand, to extend, to develop, to mature or the tendency to express and activate all the capacities of the organism.

This paper will explore a variety of definitions of creativity, several theories and models of creativity and the classic stages of creativity. Conditions for creativity will also be covered and accounts of individuals who have demonstrated creative genius will be cited. Several attempts at improving or teaching creativity will also be offered and selected tests that are used to measure creativity will be briefly discussed. Lastly, several suggestions on increasing creativity will be listed.

Definitions of Creativity

There are a variety of ways creativity can be defined. Selected ones cited by Sanders and Sanders (1984) include:

Paul Torrance: Creativity is a process that involves sensing gaps or disturbing elements, hypotheses, communicating the results and possibly modifying and retesting these

hypotheses.

Bob Samples: New Know.

Jermoe Bruner: Effective surprise. An act that is the hallmark of a creative enterprise. I could not care less about the person's intention, whether or not he intended to create. The road to banality is paved with creative intentions.

Arthur Koestler: The combination of previously unrelated structures in such a way that you get more out of the emergent whole than you put in.

S. J. Parnes: The essence of creativity is the fundamental notion of the "aha"--infusing fresh and relevant association of thoughts, facts, ideas, etc. into new configurations...one which pleases, which has meaning beyond the sum of the parts.

Abraham Maslow: Primary creativity comes out of the unconscious. Creativity is the source of new discoveries or real novelty of ideas which departs from what exists at this point.

Clark Moustakas: Creativity is an abstraction that attains concrete form in a particular and unique relation.

George Prince: Creativity is spontaneity coupled with ordering and pattern.

Carl Sagan: To solve complex problems in changing circumstances requires the activity of both cerebrum hemispheres; the path to the future lies through the corpus collosum.

Lastly, a comprehensive operational definition was offered by Hallman (1967) who stated that the creative act can be analyzed into five major components: 1) it is a whole act, a unitary instance of behavior; 2) it terminates in the production of objects or of forms of living which are distinctive; 3) it evolves out of certain mental processes; 4) it co-varies with specific personality transformations; and 5) it occurs within a particular kind of environment.

Creativity can then best be defined in terms of an interactive process. The creative process in adults often results in creative and useful products, and we judge the creativity of such adults in terms of their quantity and quality of patents, theories, books, works of art or music and scientific hypotheses.

In children, however, the product may be original with the child, but not original with the culture. Psychologist J. P. Guilford objected to the term creativity as being a confusing stereotype of many kinds of ability found in his structure of intellect. He was particularly concerned with projecting the creativity of a child to that of an adult. The term he preferred was productive thinking.

Still another way of looking at the issues of what is creativity is to analyze the creative personality correlates. The work at the Institute of Personality Assessment and Research at Berkeley yields clear results as to the creative individual. Creative individuals are intelligent, original, independent, open, intuitive, aesthetically sensitive, highly energetic, dominating,

possessing a sense of humor and a sense of destiny, and at home with ambiguity and complexity.

In searching for information on creativity, one is struck by two kinds of information, the careful systematic prescriptions of researchers in the field of creativity and the spontaneous descriptions of people who have made outstanding creative contributions to the world. I would like to make use of both kinds of information in this paper.

Stages of Creativity

One of the most quoted and classic research studies is that of Graham Wallas' (1926) study of creativity. He identified four sequential stages critical to the development of creativity in the individual: preparation, incubation, illumination (inspiration or insight) and verification.

Preparation was defined as getting ready for an investigation or the gathering of new knowledge; preparation meant taking time to collect information, listening to the opinions of others and searching for data. Incubation was a gestation period or a time out in which the brain sorts things unconsciously. Illumination was the light bulb moment. It is a time when hunches, intuition and insights emerge. Verification is a disciplined period of time in which the process of negotiating the image into a logical verbal mode occurs. To help explain Wallas' paradigm for creative discovery, we can examine two moments of discovery as reported by Ghiselin (1952). The first is the discovery of the periodic table of the elements by Mendeleev and the second is the discovery of Kekule's benzene ring.

Mendeleev reported in his journal that he lay exhausted in bed after a day long struggle to conceptualize a system in which the basic elements could be arranged by atomic weight. That night he saw a table with all the elements in place in a dream. When he awoke, he wrote the vision down and most amazing, Mendeleev anticipated the vacant spot needed for Helium. His vision became the periodic table of elements.

Kekule also wrote in his journal that a formula for the benzene ring was eluding him. He wrote, "I turned my chair to the fire and dozed. Again the atoms gamboled before me. The smaller ones kept modestly in the background. My mental eye rendered more acute by visions of this kind could now distinguish larger structures of manifold conformations twisting, twining in snake like motion. But look!! What was that? One of the snakes had seized hold of its own tail and the form whirled mockingly before my eyes. As if by a flash of lightning, I awoke."

Both Mendeleev and Kekule were well prepared and had studied their subjects for many years, gathered data and sought out and listened to the opinions of others. The incubation time stretched over many years for both scientists. The time of the illumination was instantaneous. The verification process on the other hand almost always takes considerable time to order, to test, to evaluate and to refine.

The importance of images can be demonstrated quite simply. I know that I can hold up an object that will call together for you any number of ideas and thoughts. (Holding up Campbell soup can.) Of course, the individual that this can calls to mind is Andy Warhol. Andy Warhol

knew the importance of images and ideas and imagination. When he painted the cans, the reaction of others was often, "Gee, why didn't I think of that?" In fact, in an interview he stated that images of our life, whether they were images from the news or from selected images from friends had resonance. These images Warhol felt summed up our times. If he were making a statement, what would that statement be? One art critic recently said that Warhol was saying Ha! Ha! Ha! and the statement that the Metropolitan Museum of Modern Art is making with two floors of his paintings available to the public is "Applause." Yet, one might ask, "Was he creative?"

Biologist E. W. Sinnott (Vernon, 1970) would say he was. Sinnott defined creativity as a person's ability to picture in their mind's eye something they have not seen, something never experienced. Like other creativity researchers, Sinnott believed that the creative process takes place in the unconscious. In dreams and half dreaming states, the mind is filled with a throng of images and fantasies. Here the natural tendency of the ordering process takes place. Among the throng of random images and ideas, the unconscious mind rejects certain combinations as unimportant or incompatible, but sees the significance of others. Andy Warhol could look at what others see and see something different. Sinnott stated that one must recognize the operation in the organization of ordering as not chance alone. Just as the organism pulls together random, formless stuff into the patterned system of structure and function in the body, so the unconscious mind seems to select, arrange and correlate these ideas and images into a pattern. Sinnott's concept that creativity may be the organizing power of life, manifest in mind as well as in body, is worth considering.

Theories of Creativity

One researcher, Harold Rugg (1963) from Columbia University, proposed a theory of creativity which viewed the brain/mind function as cybernetic, in that man was conceptualized as a goal seeking animal, who reacts to a particular situation by seeking the simplest possible act in response to what the situation demands. In creative expression, Rugg believed that man was seeking a solution to a problem and striving to create a metaphorical image, be it visual, musical, or poetic and that this image interprets disparate sensations, feelings or data.

Rugg said that all of this process takes place in the transliminal mind, similar to what Lawrence Kubie called the preconscious. In the transliminal mind, a dynamic ante-chamber between the conscious and unconscious mind, there is a relaxed readiness or relaxed concentration. In this state, a suggestion to create is accepted and the creative ideas are viewed by the person as real and desirable.

To solve a problem the transliminal mind freely without censorship scans images to come up with the simplest meaningful symbol image that answers a problem. When such a symbol image is found, an idea is born. Rugg calls this the creative flash. The stored images in the mind then are the basis of new creative ideas. The most graphic example of how this process works can be gleaned from John Livingston Lowe's book, The Road to Xanadu, in which he traces the images of sea serpents in the Rime of the Ancient Mariner to travelogues of explorers, to scientific treatises on fish and to Shakespeare.

Still another theory of creativity is that of Carl Jung, who departs from Ruggs' view of a transliminal mind and states that creativity has two categories, psychological which deals with materials from the realm of human consciousness and visionary that derives from the hinterland of man's collective mind. Jung believed that these visions are built into the body, inherited by each person and have primitive character. Jean Houston has explained these architypal images in her book, The Possible Human (1982).

Brewster Ghiselin in his 1952 book, The Creative Process, gives over forty accounts of creative people from diverse fields who demonstrated in graphic ways the theories of both Carl Jung and Harold Rugg, that of a dynamic mind/brain system that presents creative ideas to the individual.

The composer Wolfgang Mozart wrote in a letter in 1789 the following:

When I am as it were completely myself, entirely alone and of good cheer, say traveling in a carriage or walking after a good meal or during the night when I cannot sleep, it is on such occasions that my ideas flow best and most abundantly. Whence and how they come, I know not; nor can I force them. All this fires my soul and provided I am not disturbed, my subject enlarges itself so that I can survey it, like a fine picture or beautiful statue, at a glance. Nor do I hear in my imagination the parts successively, but I hear them, as it were all at once.

Brahms stated that he believed that man was one with the creator as did Beethoven and creating music was viewed as a wonderful and awe inspiring experience. Brahms felt very few human beings ever come to this realization, consequently that is why there were so few great composers or creative geniuses. Brahms contemplated on what oneness meant before commencing to compose, and this thinking was the first step, until he felt a creative urge, then he would appeal directly to his Maker. He describes feeling vibrations which thrilled his whole being and while in this exalted state, he could see clearly what was obscure in his ordinary mood and feel capable of drawing inspirations from above for his music.

Preparation and verification as identified by Wallas are largely a conscious process. However, incubation and illumination take place without a person's awareness.

Importance of Imagery

New images come to awareness as novel ideas, illuminations or flashes of ordinary consciousness. They seem to come most readily in a state of reverie. The reverie state includes dreams, daydreams, fantasies, visions, hallucinations, hypnagogic and hypnopompic imagery. All of these forms of the reverie state are closer to unconscious thought than to ordinary consciousness, and they provide access to consciousness for images from the unconscious.

Psychiatrists have noted that images from the unconscious are often symbolic in nature.

Creative people likewise frequently receive solutions to their problems in the form of symbolic images such as Kekule. Once an idea comes to awareness, a person works to complete his vision and give it form. Creative people have written about the importance of intuition and esthetic feeling in guiding them to choose which images to pursue. They have stated that the correct solution to a problem was the simplest solution and the one that felt good to them.

Teaching Creative Behavior

In my work at the Creative Problemsolving Institute in Buffalo, I provide people an opportunity to experience a reverie state and allow new images to surface free of censorship from the ego. I then invite the participants to relax and to experience a sense of lightness and flowing. Prior to the sessions, each individual has identified a problem and has stated it in a "In what ways might I" statement such as "In what ways might I resolve conflict with my husband," or "In what ways might I bring more joy into my life?" The participants are then grouped together in triads with one individual sharing his or her problem. Then the group can share information or ask questions to clarify the problem. Following this session, the individual who owns the problem and the two participants allow images to flow and endeavor to maintain an attitude of relaxed awareness. After the images are shared in the small group, the individual who owns the problem selects one that feels right and the entire group is invited to once again enter the reverie state to receive new images or elaborate on the current one. At the end of the imaging process, the individual is offered an opportunity to speak of the natural fit which usually happens in a spontaneous manner or given the opportunity to incubate on it.

In a session with middle managers of Procter & Gamble, a manager stated his problem in a "In What Ways Might I" statement as "In what ways might I introduce a training session to make it more interesting?" He was placed in a group with two other individuals who were also managers. They asked him several idea-finding questions such as, How many people will be there? Is this a compulsory meeting? Is there usually much enthusiasm at these meetings? Do you get nervous when you present? and Have you given presentations before?

To the above questions, he replied that there would be about 60 people present, that the meeting was compulsory and there usually was little enthusiasm for them. He also related that he had conducted several presentations before, but he did not feel confident. At this point, the three managers closed their eyes and allowed images to flow. They were told to capture the ideas on flip charts if they desired, and in notebooks which were also available or to trust their memory.

After several minutes, the managers shared their spontaneous images (Sisk & Shallcross, 1986). One imagined the manager in a game setting, pitching the ball and playing quite vigorously; another saw him standing before a group of people and opening a bag of surprises, with all eyes riveted on him, and his own image was that of a magician pulling rabbits out of a hat. The manager who identified the problem chose the image of a bag of surprises to work on and discussed the image with the other two managers. He decided to get attention immediately and use different approaches. In that particular session, we were lucky in that the next day was his meeting and we could test the efficiency of the ideas. He chose to enter the

meeting and ask the managers to stand. He then delivered part of his speech with his back to them, and then asked them to sit down, and proceeded with the important points of his topic on two way communication.

With the moment of illumination there comes a feeling of correctness, of surprise, a sense of the answer appearing whole, or in short hand form, being symbolic and a feeling of release and joy in creative change.

Creative change often requires experiential risk and willing acceptance of new patterns, new pathways and unproven possibilities. In The Nature of Science, Kuslan and Stone (1972) point out that the scientific method is a guide that can point out the road but cannot guarantee safe passage. The creative scientist like the creative artist, must stay aware of likeness in unlikeness, order in disorder. It is the same quality that Coleridge defined when describing beauty as unity in variety and that Melville captured in his poem Art.

What unlike things must meet and mate?
A flame to melt--a wind to freeze
Sad patience--joyous energies
Humility--yet pride and scorn
Instinct and study, love and hate
Audacity--reverence. They must mate
to wrestle with the Angel--Art.

What we are becoming more and more aware of is that creativity is made up of a large number of skills and talents, both cognitive and affective, that creativity is found to some degree in everyone, and that children and adults appear to have more creative potential than others (Herrmann, 1988). There are vast differences in how creativity is expressed, some may express it in art and music, others in science or literature. Yet this creativeness wherever it is found has common attributes. Creativity is a mix of many talents, attitudes and abilities, no single test or method is sufficient to measure it or no single method to nurture it in all students. As educators and mentors, we teach creatively using novel strategies, techniques and approaches and teach for creativity, that is to teach in such a way that creative behavior is enhanced in the classroom. Creativity is a continuous process, yet seldom in the history of our society has there been more need for innovative thinkers. For survival, it is important that our educational system establish creativity inducing atmospheres, which are important to the individual and to society as a whole.

Conditions for Constructive Creativity

The psychologist Carl Rogers (1961) in his book, On Becoming a Person, identified three inner conditions and two outer conditions of creativity. The inner conditions include an openness to experience or what Rogers later called extensionality. This condition is the opposite of psychological defensiveness, rigidity and boundaries in concepts, beliefs, perceptions, and hypotheses. Openness to experience implies a tolerance for ambiguity, where ambiguity exists and the ability of the individual to receive conflicting information without the need to force closure in the form of "I agree," "I disagree," "I believe" or "I don't believe."

The second inner condition is an internal locus of evaluation. Rogers conceptualized the creative individual as one who establishes his/her own value of the creative product, with the final evaluation of a creative product linked to the individual's organismic reaction to the creation. For the individual, creativity involves a feeling of being right and is accompanied by feelings of satisfaction and authenticity.

The third inner condition that Rogers identified is the ability to toy with elements and concepts. The creative person spontaneously plays with ideas, relationships, colors, shapes and through creating different and sometimes impossible juxtapositions formulates new hypotheses; translating ideas and principles from one form to another and transforming opposites into improbable, but logical equivalents. Through this spontaneous activity of juggling and toying with elements and concepts, the creative person creates a vision of life in a new and creative way.

These three inner conditions facilitate the creative urge and the formulation of breakthrough insights that often seemingly spring from the creative individual.

The external conditions that Rogers identified as fostering constructive creativity are psychological safety and freedom. Psychological safety is defined as an environment in which the individual is accepted as being of unconditional worth, that is external evaluation and criticism is nonexistent. In addition, there also exists empathic understanding from those individuals around the creative person.

Psychological freedom is available when the individual is permitted complete freedom of symbolic expression. In psychological freedom, the individual is able to think, to feel, to be whatever is deemed true for the individual. Permission is given to be free, to be afraid, to be wrong, and to feel confused.

Rogers stated that these external surroundings were important not only in our immediate physical surroundings, but also are necessary in our cultural and political surroundings. Cultures that foster such conditions promote the beneficial aspects of creative breakthroughs.

Tests of Creativity

Probably 95% of the researchers and educators who are actively involved in researching creativity use the *Torrance Tests of Creative Thinking*. It consists of a verbal test called Thinking Creatively with Words which has seven subtests or activities. The first three subtests evolve around a curious picture, an elf with pointed ears and pointed shoes looking at his or her reflection in a pool. The first activity, called "Asking" required the test taker to list all of the questions he or she can think of about the events in the picture; questions which cannot be answered by simply looking at the picture. The second subtest is called "Guessing Causes" and asks the test taker to list possible causes of the events. The third, as you might guess, is to "Guess Consequences" and asks for a list of consequences of the events taking place in the drawing.

The fourth verbal subtest is called "Product Improvement" and calls for a list of all of the improvements one can make on a stuffed toy animal. A fifth test "Unusual Uses" asks the test taker to list uses for cardboard boxes or tin cans. The next test "Unusual Questions" asks for all of the questions one can generate about cardboard boxes. The final test "Just Suppose," is an old creativity favorite. What would happen if clouds had strings attached to them, so low that you could only see people's feet?

In addition, there are also three nonverbal or figural subtests in the Thinking Creatively with Pictures. "Picture Completion" presents a colored bean shaped form that may be peeled off and stuck to a blank page to complete a picture and "Picture Completion" which presents the test taker with abstract shapes which he or she completes and labels. Still another favorite is "Circles" which includes two pages of circles or parallel lines to be incorporated into complete meaningful and perhaps clever drawings. These tests are scored for fluency, flexibility, originality and elaboration.

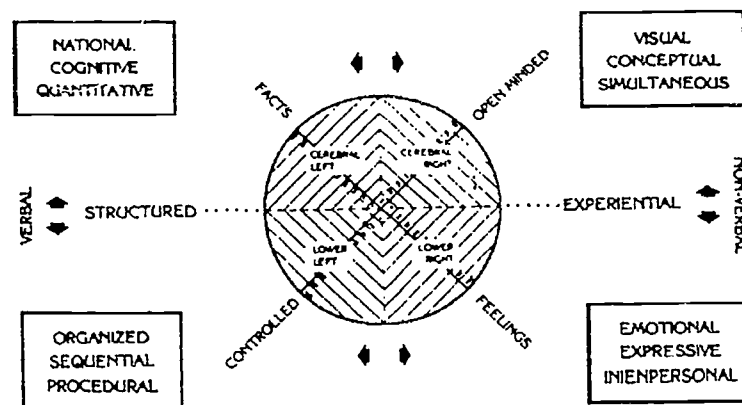
There are dozens of creativity tests, including the four divergent thinking batteries in the Torrance Tests of Creative Thinking, the Guilford tests, the Wallach and Kogan tests, and the Getzels and Jackson tests. Seven personality or biographical inventories are the Alpha Biographical Inventory, the Biographical Inventory Creativity, the Group Inventory for Finding Interests II, the Adjective Check List, the Group Inventory for Finding Interest I, the Group Inventory for Finding Talent and the Creativity Attitude Survey. Also there is the Barron-Welsch Art Scale, the Remote Associates Tests of Mednick, and Torrance and Khatena's Thinking Creatively with Sounds and Images.

Gerard, a neurophysiologist from the University of Michigan (Samuels & Samuels, 1975) has been working with the brain and reports that three areas of the cerebral cortex act successively in the interpretation of visual stimuli. Gerard agrees with Wallas' four stages of creativity and with the idea that the imagination involves the formation of new images in the unconscious. He reports that direct stimulation of area 17 in a conscious patient produces an awareness of lights, when the next area 18 is stimulated, the lights move about and if the next brain region is excited complete pictures flash into consciousness such as a man somersaulting toward the observer. His research lends considerable credibility to a model of creativity developed at General Electric.

Models of Creativity

A businessman, artist and researcher, Ned Herrmann (1988) developed a model that he views as a metaphor of how the brain works. His teaching learning model is as follows (Figure 10.1).

Figure 10.1 Whole Brain Teaching and Learning.



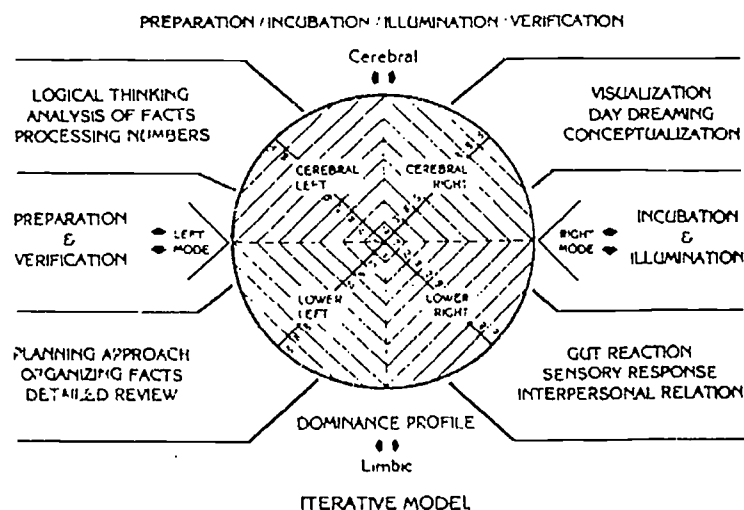
Teaching/Learning Design Model

Copyright © 1985, Ned Herrmann. Reprinted by permission.

In the above figure, the cerebral descriptors are listed at the top of the model. Left cerebral descriptors are rational, cognitive and quantitative. Right cerebral descriptors are visual, conceptual, and simultaneous. Limbic, a group of subcortical structures of the brain, are concerned especially with emotion and motivation. Left descriptors are organized, sequential and procedural. Limbic right descriptors are emotional, expressive and interpersonal.

In still another model dealing with creativity, Herrmann presents his ideas of whole brain creativity in which the individual is encouraged to shift or move from one process to another as required until the creative act is completed. These processes can occur simultaneously and are activated or encouraged by stimulating a specific quadrant. Herrmann stresses the importance of knowing more about preference for learning and that through gathering such knowledge one can extend and improve mental capabilities and begin to live in harmony with oneself, with others, and most important, to realize one's creative potential (Figure 10.4).

Figure 10.4 Whole Brained Creativity.



George Prince (1970), in The Practice of Creativity, captures Herrmann's notion of whole brain creativity when he defines creativity as spontaneity coupled with ordering and pattern, as arbitrary harmony, as unexpected astonishment, a habitual revelation, a familiar surprise, a generous selfishness, an unexpected certainty, a formidable stubbornness, a vital triviality, a disciplined freedom, an intoxicating steadiness, a repeated initiation, a difficult delight, a predictable gamble, an ephemeral solidity, a unifying difference, a demanding satisfier, a miraculous expectation, and an accustomed amazement. In this highly paradoxical definition, Prince elaborates on the multiple functions of creativity (Loye, 1985).

Where Do Ideas Come From?

Creators often describe the process of creating as allowing for chance combinations or unusual connections. Leo Tolstoy (1961) was struggling with the development of a new chapter of Anna Karenina. In his own words, he stated that "I am sitting downstairs in my study and examining the white silk piping on the sleeve of my dressing gown, which is very beautiful. And I begin to wonder how people came to invent all those intricate designs . . . and all of a sudden this silk piping gives me an idea for a whole chapter."

As one reads accounts by creative people, a common thread emerges, they were often engaged in situations and activities that were productive of receptive visualization. New ideas emerged while in thinking of other matters, walking in the country, gazing at something, being half asleep or dreaming, or under the influence of drugs.

Attempts have been made to directly teach creative behavior at the Creative Problemsolving Institute founded by Alex Osborne and currently chaired by Doris Shallcross, president of the Creative Education Foundation, and numerous colleagues from the United States and other countries. At Buffalo, the students are instructed to defer judgment and to free themselves from inhibition. The work that Shallcross and others have completed on the use of visualization and intuition (Sisk & Shallcross, 1986; Shallcross & Sisk, 1989) indicates that people can increase their ability to receive creative ideas, and be more productive. Research in the field of creativity in which creative people give accounts of the emergence of creative ideas can be divided into two categories, mental attitudes and actions. Mental attitudes provide the background for receptive visualization. Jerome Bruner, a Harvard psychologist and educator, suggests a number of conditions for fostering new ideas such as detachment and commitment, passion and decorum and freedom to be dominated by the object.

Suggestions on Increasing Creativity

Some helpful suggestions on increasing creativity are to organize your time so as to give yourself as complete freedom as possible; be alone and silent; determine the conditions under which you are most likely to spontaneously visualize and watch for images (Sisk, 1987).

Mozart (Ghiselin, 1952) commented on his creative ideas coming from walking, after a good meal or in a carriage, and he often had his wife read to him so that he would not be distracted while composing. Some of the other conditions that creative people list are:

- reading with an eye to solving the problem
- watching television or a movie
- listening to music
- napping
- meditating
- gazing or staring at an object

Still other examples of actions to stimulate creativity include Beethoven who poured cold water over his head, believing that it stimulated his brain, Rossini who covered himself with blankets while composing, and Dickens who turned his bed to the north, believing that the magnetic force helped him to create. Whatever the reason for such eccentricities, the important aspect to remember is that the person thought they worked, and perhaps through conditioning, these idiosyncratic actions came to act as a stimuli.

If indeed the mainspring of creativity is to self actualize and civilization can be viewed as a history of creative innovation, then we are all part and parcel of the process of creating ourself and creating one another. By reprogramming ourselves about creativity and its development, we can endeavor to learn to capture the creative moment for personal and collective breakthroughs.

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